

ABSTRACT

[0075] Provided are methods of producing an electrode capable of binding an analyte thereto comprising: providing a substrate capable of binding a dithiol molecule thereto; electrochemically treating the substrate using cyclic voltammetry to provide a treated substrate having a fractal dimension of greater than about 2; and contacting the treated substrate with dithiol molecules to produce an electrode having dithiol groups attached thereto and capable of binding an analyte to be detected thereto. Also provided are methods of accumulating and detecting analytes using the electrodes produced via the methods of the present invention.